CBSE Class 10 Computer Applications 2026-27

Sample Paper with Solutions

Conducted by the Central Board of Secondary Education (CBSE)

Time Allowed: 2 hours **Maximum Marks: 50**

General Instructions

(i) This Question Paper has **5 Sections A-E.**

(ii) All Questions are compulsory. However, internal choices have been provided in some of the questions.

(iii) **Section A** has **12 questions** carrying **01 mark** each.

(iv) **Section B** has **7 questions** carrying **02 marks** each.

(v) **Section C** has **4 questions** carrying **03 marks** each.

(vi) **Section D** has **1 question** carrying **04 marks**.

(vii) **Section E** has **2** Source based / Case-based / Passage based Questions carrying **04 marks** each.

Section A (12 marks)

Questions 1 to 12 carry 1 mark each (12 x 1 = 12 Marks).

1. Which of the following is responsible for requesting a web page from a web server? [1 mark]

(A) Web Browser

(B) Web Page

(C) HTML

(D) SMTP

Correct Answer: (A) Web Browser

Solution:

Concept:

- A web page is stored on a computer called a web server.
- Something on the user's computer must ask that server for the page when the user types an address.
- We have to find what does this asking.

Step 1: Key Concept The program that sends the request to the web server and then shows the page on the screen is the web browser. Chrome, Firefox and Edge are common examples. The request is sent using the HTTP protocol.

Step 2: Check option A (Web Browser) The browser takes the URL, sends a request to the server, receives the HTML file and displays it. So it is the one that requests the page. Option A is TRUE.

Step 3: Check option B (Web Page) A web page is the document that is requested. It is the thing asked for, not the one that asks. So B is FALSE.

Step 4: Check option C (HTML) HTML is the markup language used to write the page. It describes headings, links and images, but it cannot send any request. So C is FALSE.

Step 5: Check option D (SMTP) SMTP is the Simple Mail Transfer Protocol. It is used to send emails and has nothing to do with fetching web pages. So D is FALSE.

Step 6: Conclusion The web browser requests the page from the web server, so the correct option is A.

Quick Tip to Solve: Ask who sends the request: the program on your computer, or the page that comes back?

2. Identify the protocol that provides a secure, encrypted channel for remote login over an insecure network. [1 mark]

(A) TELNET

(B) SSH

(C) HTTP

(D) TCP

Correct Answer: (B) SSH

Solution:

Concept:

- We need a protocol for logging in to a remote computer in a safe way.
- The data must be encrypted so that nobody on the network can read it.

Step 1: Key Concept SSH stands for Secure Shell. It creates an encrypted channel between two computers, so passwords and commands cannot be read by others even on a public or insecure network.

Step 2: Check option A (TELNET) TELNET also gives remote login, but it sends everything, even the password, as plain text. Anyone watching the network can read it. So A is FALSE.

Step 3: Check option B (SSH) SSH gives remote login and encrypts all the data. This matches the question. So B is TRUE.

Step 4: Check option C (HTTP) HTTP is used to transfer web pages. It is not for remote login and it is not encrypted (HTTPS is the secure version). So C is FALSE.

Step 5: Check option D (TCP) TCP is a transport protocol that delivers data reliably. It does not provide login or encryption by itself. So D is FALSE.

Step 6: Conclusion SSH is the secure, encrypted protocol for remote login, so the correct option is B.

Quick Tip to Solve: Which remote login protocol encrypts its data? Remember the S in the name.

3. Which internet service allows users to participate in real-time text-based communication? [1 mark]

(A) E-learning

(B) Chat

(C) E-Groups

(D) News groups

Correct Answer: (B) Chat

Solution:

Concept:

- The key words are real-time and text-based.
- We need the service where people type messages and the others see them at once.

Step 1: Check option A (E-learning) E-learning means learning through the internet using lessons, videos and tests. It is not a live typing service. So A is FALSE.

Step 2: Check option B (Chat) Chat lets two or more users send typed messages to each other instantly, like a live conversation. So B is TRUE.

Step 3: Check option C (E-Groups) E-groups are online groups that share messages and files over time. Replies are not instant like a live conversation. So C is FALSE.

Step 4: Check option D (News groups) News groups are discussion boards where people post articles and others reply later. This is not real-time. So D is FALSE.

Step 5: Conclusion Chat is the real-time text service, so the correct option is B.

Quick Tip to Solve: Which service works like a live conversation made of typed messages?

4. Which attribute of the <img> tag is used to specify the path of the image to be displayed? [1 mark]

(A) href

(B) src

(C) link

(D) source

Correct Answer: (B) src

Solution:

Concept:

- The <img> tag shows a picture.
- The browser must be told where the picture file is stored, and that location is given by an attribute.

Step 1: Key Concept The src attribute (short for source) holds the path or URL of the image. Example: <img src="flower.jpg">.

Step 2: Check option A (href) href is used with the anchor tag <a> to give the address of a link. It is not used with images. So A is FALSE.

Step 3: Check option B (src) src is the correct attribute for the image path. So B is TRUE.

Step 4: Check option C (link) There is no link attribute for the <img> tag. (The link attribute belongs to the <body> tag and sets the colour of links.) So C is FALSE.

Step 5: Check option D (source) source is not a valid HTML attribute name for images. The short form src must be used. So D is FALSE.

Step 6: Conclusion The src attribute gives the image path, so the correct option is B.

Quick Tip to Solve: Think of the full form of src. Which word means where the image comes from?

5. Anish wants to merge three cells of a single row in an HTML table. Which attribute should he use? [1 mark]

(A) rowspan

(B) colspan

(C) width

(D) align

Correct Answer: (B) colspan

Solution:

Concept:

- Three cells of one row are side by side, which means they sit in three columns.
- Merging them means one cell must stretch across three columns.

Step 1: Key Concept The colspan attribute makes a cell cover more than one column. Example: <td colspan="3"> makes one cell as wide as three cells.

Step 2: Check option A (rowspan) rowspan merges cells vertically, across rows. Here the cells are in the same row, so A is FALSE.

Step 3: Check option B (colspan) colspan merges cells horizontally, across columns. This is what Anish needs. So B is TRUE.

Step 4: Check option C (width) width only changes the size of a cell. It does not merge any cells. So C is FALSE.

Step 5: Check option D (align) align only places the content to the left, centre or right. It does not merge cells. So D is FALSE.

Step 6: Conclusion Merging cells of one row across columns needs colspan, so the correct option is B.

Quick Tip to Solve: Cells in one row are side by side, so they are in different columns. Which span joins columns?

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6. Which of the following is a valid example of a Web Address (URL)? [1 mark]

(A) student@school.com

(B) 192.168.1.1

(C) https://www.ncert.nic.in

(D) C:/Documents/index.html

Correct Answer: (C) https://www.ncert.nic.in

Solution:

Concept:

- A web address (URL) is the full address of a resource on the web.
- It starts with a protocol such as http or https, followed by the domain name, for example https://www.ncert.nic.in.

Step 1: Check option A (student@school.com) This has an @ sign. It is the format of an email address, not a web address. So A is FALSE.

Step 2: Check option B (192.168.1.1) This is an IP address, the numeric address of a computer on a network. It has no protocol and is not a complete URL. So B is FALSE.

Step 3: Check option C (https://www.ncert.nic.in) It has the protocol (https), the www part and the domain name (ncert.nic.in). This is a proper URL. So C is TRUE.

Step 4: Check option D (C:/Documents/index.html) This is a path of a file on the local computer. It does not use a web protocol and does not point to a web server. So D is FALSE.

Step 5: Conclusion Only https://www.ncert.nic.in has the parts of a URL, so the correct option is C.

Quick Tip to Solve: A URL begins with a protocol followed by ://. Which option does that?

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7. The process of transferring a file from our local computer to a remote web server is called: [1 mark]

(A) Downloading

(B) Uploading

(C) Browsing

(D) Retrieving

Correct Answer: (B) Uploading

Solution:

Concept:

- The file goes from our own (local) computer to the web server.
- We need the word for sending a file in this direction.

Step 1: Key Concept Sending a file from a local computer to a remote server is uploading. The opposite, bringing a file from the server to our computer, is downloading. FTP is a protocol often used for both.

Step 2: Check option A (Downloading) Downloading is the reverse direction, from server to local computer. So A is FALSE.

Step 3: Check option B (Uploading) Uploading means local computer to remote server. This matches. So B is TRUE.

Step 4: Check option C (Browsing) Browsing means viewing web pages using a browser. No file is sent to the server. So C is FALSE.

Step 5: Check option D (Retrieving) Retrieving means getting data back from a source, which is the same direction as downloading. So D is FALSE.

Step 6: Conclusion Sending a file to a web server is uploading, so the correct option is B.

Quick Tip to Solve: Which way does the file move: to the server or from the server?

8. The set of rules and manners that should be followed while communicating online is known as: [1 mark]

(A) Cyber Crime

(B) Netiquettes

(C) Digital Divide

(D) Software License

Correct Answer: (B) Netiquettes

Solution:

Concept:

- We need the name for good manners and rules while we talk or work online, like being polite in emails, chats and social media.

Step 1: Key Concept Netiquette is made from the words network and etiquette. It means the accepted rules of polite behaviour on the internet.

Step 2: Check option A (Cyber Crime) Cyber crime means illegal acts done using computers or the internet, such as hacking. It is not a set of good manners. So A is FALSE.

Step 3: Check option B (Netiquettes) Netiquettes are the rules of good behaviour online. So B is TRUE.

Step 4: Check option C (Digital Divide) Digital divide is the gap between people who have access to technology and those who do not. So C is FALSE.

Step 5: Check option D (Software License) A software license is a legal agreement about how software may be used. So D is FALSE.

Step 6: Conclusion Netiquettes are the rules and manners for online communication, so the correct option is B.

Quick Tip to Solve: Split the word into net and etiquette.

9. Which of the following refers to the ownership and legal rights over digital assets such as online content, videos, and music? [1 mark]

(A) Netiquettes

(B) Digital Property Rights

(C) Freedom of Information

(D) E-commerce Fraud

Correct Answer: (B) Digital Property Rights

Solution:

Concept:

- The question is about who owns digital items like online articles, videos and songs, and what legal rights the owner has.

Step 1: Key Concept Digital property rights give the creator or owner legal control over digital content. Others cannot copy or use it without permission.

Step 2: Check option A (Netiquettes) Netiquettes are manners to follow online. They are not about ownership. So A is FALSE.

Step 3: Check option B (Digital Property Rights) This is exactly about ownership and legal rights over digital content. So B is TRUE.

Step 4: Check option C (Freedom of Information) Freedom of information is the right of people to get information from public bodies. It is not about owning content. So C is FALSE.

Step 5: Check option D (E-commerce Fraud) E-commerce fraud means cheating in online buying and selling. So D is FALSE.

Step 6: Conclusion Ownership and legal rights over digital content are called digital property rights, so the correct option is B.

Quick Tip to Solve: Which term joins ownership with digital content?

10. State whether the following statement is True or False:
The World Wide Web (WWW) and the Internet are exactly the same thing. [1 mark]

Solution:

Concept:

- We must check if the Web and the Internet mean the same thing.

Step 1: Define the Internet The Internet is the huge global network of connected computers and devices. It carries many services such as email, file transfer, chat and the web.

Step 2: Define the World Wide Web The World Wide Web is only one service that runs on the Internet. It is a collection of web pages linked together and viewed with a browser using HTTP.

Step 3: Compare The Internet is the network, and the Web is a service that uses it. Email and FTP also use the Internet but are not part of the Web. So the two are not the same.

Step 4: Conclusion The statement is False because the Web is only one service on the Internet.

Quick Tip to Solve: Which one is the network and which one is just a service on it?

11. Q-11 and Q-12 are Assertion (A) and Reason (R) type questions. Choose the correct option as given.
Assertion (A): A Web Browser is a software application used to access information on the World Wide Web.
Reason (R): Google Chrome and Mozilla Firefox are examples of web development software. [1 mark]

(A) Both A and R are True, and R correctly explains A.

(B) Both A and R are True, but R does not correctly explain A.

(C) A is True, but R is False.

(D) A is False, but R is True.

Correct Answer: (C) A is True, but R is False.

Solution:

Concept:

- We must check the Assertion and the Reason separately, and then see how they are related.

Step 1: Check the Assertion (A) A web browser is software that fetches and shows web pages from the World Wide Web. So A is TRUE.

Step 2: Check the Reason (R) Google Chrome and Mozilla Firefox are real browsers. But they are not web development software. Web development tools are things like code editors (for example VS Code or Notepad) used to write web pages. Browsers are used to view pages. So R is FALSE.

Step 3: Check option A It needs R to be true. R is false, so option A is wrong.

Step 4: Check option B It also says R is true. So option B is wrong.

Step 5: Check option C It says A is true and R is false. This matches our findings, so option C is right.

Step 6: Check option D It says A is false. But A is true, so option D is wrong.

Step 7: Conclusion A is true and R is false, so the correct option is C.

Quick Tip to Solve: Check A and R separately. Are Chrome and Firefox used to build pages or to view them?

12. Assertion (A): SMTP is used by the receiver to download emails from the mail server.
Reason (R): POP3 is a protocol designed for retrieving emails from a remote server to a local client. [1 mark]

(A) Both A and R are True, and R correctly explains A.

(B) Both A and R are True, but R does not correctly explain A.

(C) A is True, but R is False.

(D) A is False, but R is True.

Correct Answer: (D) A is False, but R is True.

Solution:

Concept:

- Both statements are about email protocols.
- We check what each protocol does.

Step 1: Check the Assertion (A) SMTP (Simple Mail Transfer Protocol) is used to send emails from the sender to the mail server and between mail servers. It is not used by the receiver to download

mail. So A is FALSE.

Step 2: Check the Reason (R) POP3 (Post Office Protocol version 3) is used by an email client to retrieve mail from the server to the local computer. So R is TRUE.

Step 3: Check option A and option B Both say A is true. A is false, so options A and B are wrong.

Step 4: Check option C It says R is false. R is true, so option C is wrong.

Step 5: Check option D It says A is false but R is true. This matches. So option D is right.

Step 6: Conclusion A is false and R is true, so the correct option is D.

Quick Tip to Solve: SMTP sends mail. Which protocol is used to fetch it?

Section B (14 marks)

Questions 13 to 19 carry 2 marks each (7 x 2 = 14 Marks).

13. Explain the purpose of the vlink and alink attributes used within the <body> tag. [2 marks]

Solution:

Concept:

- Both attributes are written inside the <body> tag and both change the colour of hyperlinks, but for different states of the link.

Step 1: Purpose of vlink vlink means visited link. It sets the colour of a link that the user has already clicked or visited. Example: vlink="purple".

Step 2: Purpose of alink alink means active link. It sets the colour of a link at the exact moment it is being clicked. Example: alink="red".

Step 3: Example <body vlink="purple" alink="red">

Step 4: Conclusion vlink colours already visited links and alink colours the link at the moment of clicking.

Quick Tip to Solve: Think of the state of a link: already visited, or being clicked right now.

14(A). A school is developing a digital learning platform where students can submit projects and communicate with teachers online. The school wants to ensure that the system is efficient, reliable, and secure for sending and receiving files. A student is required to send an electronic project report as an email attachment to the teacher.
Based on the given scenario, answer the following questions:
a. Identify the protocol used for sending emails and justify your answer with one appropriate reason.
b. Explain one possible problem that could occur if an unsuitable or insecure protocol is used, and suggest one measure the school can implement to ensure secure email communication. [2 marks]

Solution:

Concept:

- The student sends a project report as an email attachment.
- Part (a) asks for the protocol used to send mail and one reason.
- Part (b) asks for one problem with an insecure protocol and one safety measure.

Step 1: Part (a): the protocol Emails are sent using SMTP, the Simple Mail Transfer Protocol. It moves the mail from the sender's email client to the mail server, and from server to server until it reaches the receiver's server.

Step 2: Part (a): the reason SMTP is the standard protocol for sending emails, and it supports attachments such as a project report file. So it suits this task.

Step 3: Part (b): one problem If an unsuitable or insecure protocol is used, messages could be intercepted and read by unauthorised persons. The project report may also be changed or stolen. Another problem is that mail may fail or be delayed.

Step 4: Part (b): one measure The school can use strong authentication for student and teacher accounts (for example strong passwords with a one-time code). It can also teach users to check the recipient address before sending files.

Step 5: Conclusion The protocol is SMTP. Insecure use can let others read the mail, and strong authentication helps keep it safe.

Quick Tip to Solve: Outgoing mail uses one particular protocol. For part (b) think who could read an unprotected message.

OR

14(B). What do you understand by the term web-address? How is it different from an email address?

[2 marks]

Solution:

Concept:

- We must define a web address and then show one clear difference from an email address.

Step 1: Meaning of web address A web address, also called a URL (Uniform Resource Locator), is the address used to locate a website or a web page on the internet. Example: https://www.ncert.nic.in.

Step 2: Meaning of email address An email address identifies a user's mailbox. It is written as username@domain, for example student@school.com.

Step 3: The difference A web address is used to locate and open a website in a browser. An email address is used to send and receive emails. A web address has a protocol like http or https and no @ sign, while an email address has the @ sign.

Step 4: Conclusion A web address locates a website, while an email address is used to send and receive emails.

Quick Tip to Solve: Say what each address is used for, then compare the formats.

15. What is the significance of the alt attribute in the <img> tag? Provide one scenario where it is useful. [2 marks]

Solution:

Concept:

- We must say why the alt attribute is important and give one real situation where it helps.

Step 1: Significance of alt The alt (alternate text) attribute gives a short text description of the image. If the image cannot be displayed, the browser shows this text in its place. So the user still understands what the image stands for.

Step 2: One scenario When the internet is slow or the image file is missing, the picture does not load. The alt text such as "Rose" is shown instead. Screen readers also read the alt text for visually impaired users.

Step 3: Example <img src="flower.jpg" alt="Rose">

Step 4: Conclusion The alt attribute gives text for an image and is shown when the image does not load.

Quick Tip to Solve: What appears on screen when an image cannot load?

16(A). Write the HTML code to embed an audio file named song.mp3 into a webpage. Ensure that the audio plays automatically. [2 marks]

Solution:

Concept:

- We need the HTML tag that plays sound, the file name, and the attribute that starts playing on its own.

Step 1: Choose the tag The <audio> tag embeds sound in a page. The file name goes in its src attribute: src="song.mp3".

Step 2: Add autoplay The autoplay attribute makes the audio start as soon as the page loads. The controls attribute adds play and pause buttons, so the user can stop it.

Step 3: Write the code <audio src="song.mp3" autoplay controls></audio>

Step 4: Conclusion The audio tag with src and the autoplay attribute does the job.

Quick Tip to Solve: Use the audio tag. Which attribute starts the sound without a click?

OR

16(B). Write the HTML code snippet to create an Ordered List of the top three winners of a competition. However, the list should start numbering from '4' instead of '1'. List items are as shown below: (4. Rahul, 5. Sneha, 6. Amit) [2 marks]

Solution:

Concept:

- We need an ordered (numbered) list of three names, where the first number is 4 instead of 1.

Step 1: Choose the tags The <ol> tag makes an ordered list. Each item goes in an <li> tag.

Step 2: Change the starting number The start attribute of <ol> sets the first number. With start="4" the items are numbered 4, 5 and 6.

Step 3: Write the code <ol start="4">
Rahul
Sneha
Amit

Step 4: Conclusion ol with start=4 and three li items gives 4. Rahul, 5. Sneha, 6. Amit.

Quick Tip to Solve: Which attribute of the ol tag decides the first number?

17. How can we create a hyperlink that directly opens the user's email client to send an email to "info@school.com"? Write the syntax. [2 marks]

Solution:

Concept:

- We need a link that, when clicked, opens the email program with the address already filled in.

Step 1: Key idea A link is made with the anchor tag <a> and its href attribute. If we write mailto: followed by the email address inside href, the browser opens the default email client.

Step 2: Write the syntax Contact Us

Step 3: What happens on click The email program opens and the To field has info@school.com. The text Contact Us is what the user sees and clicks.

Step 4: Conclusion Use the mailto scheme in the href attribute of an anchor tag.

Quick Tip to Solve: What word must come before the email address in the href value?

18(A). Explain the purpose of the style attribute in HTML. Write an HTML statement to set the font color of a paragraph to "red" using inline CSS. [2 marks]

Solution:

Concept:

- Part one asks for the purpose of the style attribute.
- Part two asks for one line of code that makes a paragraph red.

Step 1: Purpose The style attribute is used to apply CSS rules directly to one HTML element. This is called inline CSS. It changes how that element looks, such as its colour, size or font.

Step 2: Build the code A paragraph uses the tag. Inside it we add style="color:red;". The CSS property color sets the text colour and red is the value.

Step 3: Write the statement This is a paragraph.

Step 4: Conclusion The style attribute gives inline CSS to one element, and color:red; makes the text red.

Quick Tip to Solve: The style attribute holds CSS rules written as property:value;

OR

18(B). Ravi is trying to make an online payment on an e-commerce website. He sees that the website's URL starts with "http". Should he continue with the payment? Give reasons to support your answer. [2 marks]

Solution:

Concept:

- Ravi is about to pay online and the URL begins with http.
- We must decide if he should go ahead.

Step 1: Compare http and https HTTP sends data as plain text, so someone on the network can read it. HTTPS uses encryption (SSL/TLS), so card details and passwords are protected. A secure site also shows a padlock in the address bar.

Step 2: Decision Ravi should not continue with the payment. The site is not secure, and his card number, password or OTP could be stolen.

Step 3: What he should do He should leave the page and use a website whose URL starts with https, or the official app of the seller.

Step 4: Conclusion Ravi should not pay, because http is not secure and https is needed for safe transactions.

Quick Tip to Solve: Which letter is missing from http in a safe payment site?

19. What is e-Governance? Give one example of an e-Governance website in India. [2 marks]

Solution:

Concept:

- We need the meaning of e-Governance and one website in India that is an example of it.

Step 1: Meaning e-Governance is the use of Information and Communication Technology (ICT) to deliver government services to citizens in a convenient, efficient and transparent manner. People can use services online without visiting government offices.

Step 2: Example The National Portal of India, https://www.india.gov.in, gives information and services of the government in one place. Passport Seva and DigiLocker are other examples.

Step 3: Conclusion e-Governance means delivering government services through ICT. Example: india.gov.in.

Quick Tip to Solve: Expand the e in e-Governance and think of a government portal.

Section C (12 marks)

Questions 20 to 23 carry 3 marks each (4 x 3 = 12 Marks).

**20. The following HTML statements contain errors. Rewrite the correct statements for each. I. Next Page II. <img href="flower.jpg" alt="Rose"> III. <ul type="A">
Item 1
** [3 marks]

Solution:

Concept:

- An attribute is an extra setting written inside the opening tag as name="value".
- In each statement the tag name is correct, but the attribute does not suit that tag.
- So for every tag we recall the attribute it really uses and swap the wrong one.

Step 1: Correct statement I (anchor tag) The <a> tag makes a hyperlink. The address of the target page goes in the href attribute (hypertext reference). The statement uses src, which the anchor tag does not use, so the link would not work. We replace src with href.
Next Page

Step 2: Correct statement II (image tag) The <img> tag shows a picture. The file name of the picture goes in the src attribute (source). The statement uses href, which is a link attribute, so the browser would not find the picture. The alt attribute is already correct, because it holds the text shown when the picture cannot load.
<img src="flower.jpg" alt="Rose">

Step 3: Correct statement III (list tag) The attribute type="A" sets the numbering style to capital letters A, B, C. This style belongs to an ordered list, which is made with <ol>. An unordered list <ul> shows bullets and does not take a letter style. So we either change <ul> to <ol> and keep the type, or keep <ul> and remove the type. Both fixes are correct.
<ol type="A">
Item 1 or Item 1

Step 4: Conclusion The wrong attributes were src in the anchor tag, href in the image tag, and the list type on an unordered list. The corrected statements are listed above.

Quick Tip to Solve: Ask what each tag needs: a link needs the page address, a picture needs the file name, and letter numbering needs an ordered list.

21(A). With reference to mobile technologies, briefly explain the following:
I. SMS
II. 3G
III. 5G [3 marks]

Solution:

Concept:

- The question asks for a short explanation of three mobile technology terms.
- Each term needs one clear definition and one key feature.
- Each part carries 1 mark.

Step 1: Explain SMS SMS stands for Short Message Service. It is the text messaging service of mobile phones. A short text, usually up to 160 characters, goes from one phone to another through the mobile network. It works on almost every phone, even a basic one, and needs no internet connection.

Step 2: Explain 3G 3G stands for Third Generation. It is a mobile technology that brought much faster data transfer than the earlier 2G. Because of the higher speed, users could make video calls, browse websites and use the mobile internet for the first time in a practical way.

Step 3: Explain 5G 5G stands for Fifth Generation. It is the latest generation of cellular mobile communication. It gives ultra-low latency (very small delay), so devices respond almost at once. It connects a huge number of devices together, such as IoT sensors, and gives much faster downloads than 4G.

Step 4: Conclusion SMS is the text messaging service, 3G brought faster data with video calling and mobile internet, and 5G gives ultra-low delay, massive IoT connectivity and the fastest speeds.

Quick Tip to Solve: Give one line for each term: what it is and the one thing it is known for.

22(A). I. Write the HTML code to embed a video file named documentary.mp4 into a webpage. The video should have a width of 400 pixels and a height of 300 pixels. It should display playback controls.
II. Which attribute of the tag is used to specify the font family? [3 marks]

Solution:

Concept:

- Part I asks for the tag that embeds a video with a fixed size and playback buttons.
- Part II asks for one attribute name of the font tag.

Step 1: Choose the tag and attributes for part I HTML5 gives the <video> tag to play a video without any plugin. We need four things. The src attribute holds the file name. The width attribute is 400 and the height attribute is 300, both in pixels. The controls attribute adds the play, pause, volume and seek bar.

Step 2: Write the code for part I <video src="documentary.mp4" width="400" height="300" controls></video> The tag is closed with </video>. The attribute controls needs no value.

Step 3: Answer part II The tag has three attributes. size sets the size, color sets the colour, and face sets the font family. Font family means the typeface, such as Arial or Verdana. So the attribute for font family is face. For example, Hello shows Hello in Arial.

Step 4: Conclusion Part I uses the video tag with src, width, height and controls. Part II is the face attribute.

Quick Tip to Solve: Use the video tag with width, height and controls. The font tag sets family with the attribute named after the typeface's face.

OR

22(B). Write the HTML code to create a table with 2 rows and 2 columns and a border of 2. The first row should be the table header containing Roll No and Name, and the second row should contain the values 1 and Rahul respectively. [3 marks]

Solution:

Step 1: Recall the table tags <table> starts the table. <tr> makes one row. <th> makes a header cell, and <td> makes an ordinary data cell. The border attribute of <table> sets the thickness of the table lines.

Step 2: Plan the structure We need 2 rows and 2 columns. So there are two <tr> tags and two cells inside each. Row 1 is the header, so its cells use <th> with Roll No and Name. Row 2 holds data, so its cells use <td> with 1 and Rahul.

Step 3: Write the code <table border="2"><tr><th>Roll No</th><th>Name</th></tr><tr><td>1</td><td>Rahul</td></tr></table>

Step 4: Check the result The table has 2 rows and 2 columns. The border value is 2. The first row shows bold, centred headings Roll No and Name, and the second row shows 1 and Rahul.

Step 5: Conclusion The table is built with the table tag and border 2, one row of th cells and one row of td cells.

Quick Tip to Solve: Start with the table tag and its border attribute, then use th cells for the first row and td cells for the second.

23(A). Write the HTML code to display the following statements on a webpage:
I. The chemical formula for Sulfuric Acid is H_2SO_4.
II. The Pythagorean theorem is $a^2 + b^2 = c^2$.
III. The coordinates are represented as (X_1, Y_1). [3 marks]

Solution:

Step 1: Recall the two tags The <sub> tag lowers the text below the normal line. This is called a subscript. The <sup> tag raises the text above the normal line. This is called a superscript.

Step 2: Statement I: subscripts In H2SO4 the numbers 2 and 4 are written low, so each one is wrapped in <sub>. The letters stay normal.
The chemical formula for Sulfuric Acid is H₂SO₄.

Step 3: Statement II: superscripts In a2 + b2 = c2 the small 2 is a power, so it is written high. Each 2 is wrapped in <sup>.
The Pythagorean theorem is a² + b² = c².

Step 4: Statement III: subscripts again In (X1, Y1) the 1 sits low after each letter, so each 1 is wrapped in <sub>.
The coordinates are represented as (X₁, Y₁).

Step 5: Put the three lines on the page Each statement is a separate paragraph, so we place each one in a tag.
The chemical formula for Sulfuric Acid is H₂SO₄. The Pythagorean theorem is a² + b² = c². The coordinates are represented as (X₁, Y₁).

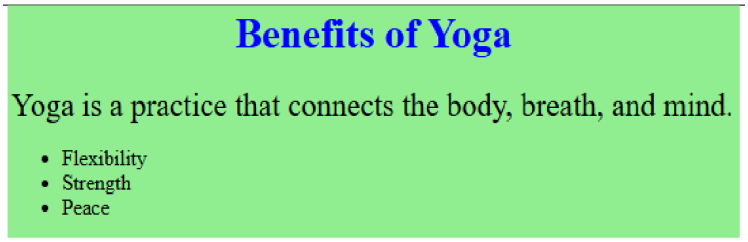
Step 6: Conclusion Use the sub tag for the low numbers in statements I and III and the sup tag for the powers in statement II.

Quick Tip to Solve: Low characters need the subscript tag, and raised powers need the superscript tag.

Section D (4 marks)

Question 24 carries 4 marks (1 x 4 = 4 Marks).

24(A). Write the complete HTML code to design a webpage with the following specifications:



(I) The title of the webpage should be "Healthy Living".
(II) Background color of the page should be "LightGreen".
(III) The main heading "Benefits of Yoga" should be in color "Blue".
(IV) The paragraph describing yoga (as shown above) with font size "5".
(V) An unordered list listing three benefits: "Flexibility", "Strength", "Peace". [4 marks]

Solution:

Step 1: Plan the page skeleton Every page is wrapped in <html>. The title goes in <head>, and everything that shows on the page goes in <body>. We then add each specification inside this skeleton, one at a time.

Step 2: Specification I: the title The page title shows on the browser tab. It is written with the <title> tag inside <head>.
<head><title>Healthy Living</title></head>

Step 3: Specification II: the background colour The page background is set with the bgcolor attribute of <body>.
<body bgcolor="LightGreen">

Step 4: Specification III: the blue heading The main heading uses <h1>. The picture shows it in the middle, so we place it inside . The blue colour is given with inline CSS in the style attribute.
<h1 style="color:blue;">Benefits of Yoga</h1>

Step 5: Specification IV: the paragraph with font size 5 The sentence is a paragraph, so it goes in . The size 5 is set with around the text.
Yoga is a practice that connects the body, breath, and mind.

Step 6: Specification V: the unordered list A bulleted list is made with <ul>, and each benefit is one <li>.
Flexibility
Strength
Peace

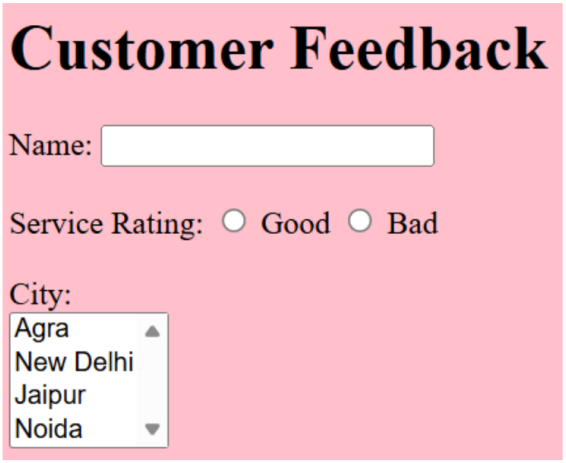
Step 7: Join everything into one page Placing all pieces inside the skeleton gives the complete code.
<html><head><title>Healthy Living</title></head><body bgcolor="LightGreen"> <h1 style="color:blue;">Benefits of Yoga</h1> Yoga is a practice that connects the body, breath, and mind. Flexibility
Strength
Peace
</body></html>

Step 8: Conclusion The page above satisfies all five specifications.

Quick Tip to Solve: Build the page in order: title in head, bgcolor on body, h1 with blue colour, font tag with size 5, then ul with three li.

OR

24(B). Write the complete HTML code to design a "Feedback Form" as shown here, according to the specifications given below:



I. Background Color: The page background should be "Pink".
II. Heading: "Customer Feedback" in the largest heading tag, center-aligned.
III. Form Elements:Name: A Text box to accept the user's name.Service Rating: Two Radio buttons with labels "Good" and "Bad".City: A List box, showing four city names. [4 marks]

Solution:

Step 1: Plan the page The page needs a pink background, a large heading and a form. The form has three controls: a text box, two radio buttons and a list box. All controls must sit between <form> and </form>.

Step 2: Specification I: pink background The background colour is set with bgcolor on the body tag.
<body bgcolor="Pink">

Step 3: Specification II: the heading The largest heading tag is <h1>. The align attribute set to center puts it in the middle.
<h1 align="center">Customer Feedback</h1>

Step 4: Specification III: the name text box A text box is an <input> tag with type="text". The label Name: is plain text written before it.
Name: <input type="text" name="name">

Step 5: Specification III: the radio buttons A radio button is an <input> tag with type="radio". Both buttons use the same name, here rating, so only one can be chosen at a time. The labels Good and Bad are written after each button.
Service Rating: <input type="radio" name="rating" value="good"> Good <input type="radio" name="rating" value="bad"> Bad

Step 6: Specification III: the city list box A list is made with <select> and one <option> for each city. The attribute size="4" shows all four cities at once, which makes it a list box. Without size it would be a drop-down.
City:
<select size="4"><option>Agra</option><option>New Delhi</option><option>Jaipur</option><option>Noida</option></select>

Step 7: Join everything Placing all parts inside the page gives the complete code.

<html><body bgcolor="Pink"><h1 align="center">Customer Feedback</h1><form> Name: <input type="text" name="name">

 Service Rating: <input type="radio" name="rating" value="good"> Good <input type="radio" name="rating" value="bad"> Bad

 City:
<select size="4"><option>Agra</option><option>New Delhi</option><option>Jaipur</option><option>Noida</option></select></form></body></html>

Step 8: Conclusion The complete feedback form is written above.

Quick Tip to Solve: Everything sits inside the form tag: an input of type text, two inputs of type radio sharing a name, and a select tag with size 4.

Section E (8 marks)

Questions 25 and 26 are source/case-based questions carrying 4 marks each (2 x 4 = 8 Marks).

25(I). Rohan receives an email informing him that he has won a Rs 1 Crore lottery prize. The email instructs him to click on a link and enter his bank details, including his account number, password, and OTP, in order to claim the reward. Just as Rohan is about to click the link, his sister intervenes and warns him.

Which type of online fraud is being attempted in this situation? [1 mark]

Solution:

Step 1: Look at what the email asks The email claims Rohan has won a big prize. It tells him to click a link and type his bank details, password and OTP. A real lottery never asks for these secrets by email.

Step 2: Name the fraud A fake message that lures a person into giving private or money details is an online fraud. Here the fake email pretends to be a prize notice and aims to steal bank data. This is a phishing type of trick, and it falls under e-commerce fraud, because it is an attempt to steal money through an online channel.

Step 3: Conclusion The situation is an attempt of e-commerce fraud, carried out by a phishing email that offers a false prize.

Quick Tip to Solve: A fake email that asks for bank details and an OTP is a well known trick to steal money online.

25(II). Why do you think the attacker requested the OTP? [1 mark]

Solution:

Step 1: Recall what an OTP does OTP means One Time Password. A bank sends it to the account holder's own phone to confirm that a payment or a login is really being done by that person. It is an extra security check on top of the password.

Step 2: See what the attacker wants The attacker already asks for the account number and password. Those alone are not enough to move money, because the bank will still ask for the OTP. So the attacker needs the OTP to pass this check.

Step 3: State the reason With the OTP, the attacker can log in or approve a payment as if he were Rohan. So the OTP was requested to gain unauthorised access to the account by bypassing its security checks.

Step 4: Conclusion The attacker wanted the OTP to get past the bank's security check and take control of Rohan's account.

Quick Tip to Solve: Think about what the OTP protects and what the attacker could do after getting it.

25(III). Mention one precaution that can help prevent such fraud attempts. [1 mark]

Solution:

Step 1: Find what makes the fraud work The fraud works only when the victim hands over secret details such as a password or an OTP. If the victim keeps these secret, the attacker gets nothing.

Step 2: Choose the precaution The best precaution is to never share passwords or OTPs with anyone, whether by email, message or phone. A bank never asks for them.

Step 3: Add how to follow it Rohan should not click the link. He should delete the email and may report it to the bank or the cyber crime portal.

Step 4: Conclusion Never share passwords or OTPs with anyone.

Quick Tip to Solve: What secret information did the email ask for? Keeping it private stops the fraud.

25(IV). State one visual clue that usually indicates a fraudulent website or email. [1 mark]

Solution:

Step 1: Think of what fraudsters copy Fraudsters make fake emails and websites that look like real ones. They copy the look, but they often slip in small details.

Step 2: Name the clue One common visual clue is a suspicious or incorrect email address, for example a sender address with odd letters instead of the bank's real name. Another clue is spelling mistakes in the message or the website name.

Step 3: State the answer So a suspicious or incorrect email address, or spelling mistakes, shows that an email or website may be fraudulent.

Step 4: Conclusion A suspicious or incorrect email address or spelling mistakes is a visual clue of a fraud.

Quick Tip to Solve: Look at the sender's address and the spelling in the message.

26(I). Maya is a talented software developer who has created a new photo-editing application. She wants to share her software with the public so that other developers can learn from her code and improve upon it. However, she also wants to ensure that she receives credit as the original creator and that no one can claim her work as their own or sell it without her permission.

Based on the above information, answer the following questions:

Maya decides to release the software under a license that allows anyone to view, modify, and distribute the source code freely. What type of software is this called? [1 mark]

Solution:

Step 1: Pick out the key words The license lets anyone view, change and share the source code. Source code is the original program text written by the developer.

Step 2: Match with a software type Software whose source code is open to everyone for viewing, changing and sharing is called Open Source Software, short form OSS. When it is also free to use, it is called Free and Open Source Software, short form FOSS.

Step 3: Why not the other types Proprietary software keeps the source code secret and does not allow changes. Shareware lets users try it for a limited time. Freeware is free to use but may still hide its code. Only open source fits the description.

Step 4: Conclusion Maya's software is Open Source Software (OSS), also called FOSS.

Quick Tip to Solve: Which kind of software lets everyone see and change the source code?

26(II). Which Intellectual Property Right (IPR) automatically protects Maya's original code from being copied or claimed by others without her permission? [1 mark]

Solution:

Concept:

- Maya's code is an original work that she created.
- She wants others not to copy it or call it their own without her permission.

Step 1: Match with an IPR Copyright protects original creative work such as books, music, pictures and software code. It comes into force automatically as soon as the work is created, and the creator need not apply for it.

Step 2: Why not the others A trademark protects names and logos, not code. A patent protects a new invention and has to be applied for. So the right that protects the code automatically is copyright.

Step 3: Conclusion Copyright automatically protects Maya's original code.

Quick Tip to Solve: Which IPR protects original creative works like programs without any registration?

26(III). If Maya wants to prevent others from using her software's unique name or logo to sell fake versions of her app, which form of protection should she register for? [1 mark]

Solution:

Step 1: Find what is to be protected The thing to protect here is a unique name or logo. It tells buyers which app is the genuine one.

Step 2: Match with the right A trademark protects a word, name, symbol or logo that identifies a product or a company. After registration, nobody else can use it for sale without permission.

Step 3: Why not the others Copyright protects the code, not the brand name. A patent protects an invention. So Maya should register a trademark.

Step 4: Conclusion Maya should register a trademark for the name and logo of her app.

Quick Tip to Solve: Which IPR protects names, symbols and logos?

26(IV). A competitor downloads Maya's code, removes her name, and sells it as their own product without making any changes. What is this unethical act called? [1 mark]

Solution:

Concept:

- The competitor took Maya's code, deleted her name, and sold the code as his own work.
- He made no changes of his own.

Step 1: Name the act Using another person's work and presenting it as your own is called plagiarism. Because the work is protected software that was copied and sold without permission, the act is also software piracy and a copyright infringement.

Step 2: Why it is unethical It takes away the credit and the earnings that belong to the real creator, and it breaks the law.

Step 3: Conclusion The act is plagiarism. It is also called software piracy or copyright infringement.

Quick Tip to Solve: Which term describes copying someone's work and presenting it as your own?